Climate Change and Human Health Literature Portal

National Institute of Environmental Health Sciences

Meteorological variables and malaria in a Chinese temperate city: A twenty-year time-series data analysis

Abstract:

Objectives: This study aimed to examine the impact of climate variation on malaria in a temperate region of China. Methods: A 20-year historical time-series data analysis was conducted to examine the relationship between meteorological variables, including maximum and minimum temperatures, rainfall, humidity, and cases of malaria in Jinan, a temperate city in northern China. Data were retrieved from 1959 and 1979 and analyzed on a monthly basis. Spearman correlation and cross-correlation analyses were performed to identify time lag values between each meteorological variable and the number of malaria cases. The Seasonal Autoregressive Integrated Moving Average (SARIMA) model was used to quantify the relationship between the meteorological variables and malaria cases. Results: The SARIMA models indicate that a 1 °C rise in maximum temperature may be related to a 7.7% to 12.7% increase and a 1 °C rise in minimum temperature may result in approximately 11.8% to 15.8% increase in the number of malaria cases. A clear association between malaria and other selected weather variables, including rainfall and humidity, has not been detected in this study. Conclusions: Temperature could play an important role in the transmission of malaria in temperate regions of China. © 2010 Elsevier Ltd.

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Resource Description

Communication: ⊠

resource focus on research or methods on how to communicate or frame issues on climate change; surveys of attitudes, knowledge, beliefs about climate change

 A focus of content

Communication Audience: ⊠

audience to whom the resource is directed

 Policymaker

Exposure : ⊠

weather or climate related pathway by which climate change affects health

 Meteorological Factors, Precipitation, Temperature

Geographic Feature: ⊠

resource focuses on specific type of geography

 None or Unspecified

Geographic Location: ☒

resource focuses on specific location

 Non-United States

   Non-United States: Asia

      Asian Region/Country: China

Health Impact: ☒

specification of health effect or disease related to climate change exposure

 Infectious Disease

   Infectious Disease: Vectorborne Disease

      Vectorborne Disease: Mosquito-borne Disease

      Mosquito-borne Disease: Malaria

Mitigation/Adaptation: ☒

mitigation or adaptation strategy is a focus of resource

 Adaptation

Model/Methodology: ☒

type of model used or methodology development is a focus of resource

 Outcome Change Prediction

Resource Type: ☒

format or standard characteristic of resource

 Research Article

Timescale: ☒

time period studied

 Time Scale Unspecified

Vulnerability/Impact Assessment: ☒

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

 A focus of content